

CLAIMS

What is claimed is:

1. An optical communications network having a plurality of nodes comprising:
 2. a first node including a first administrative node processor module for performing administrative functions, and a persistent storage module for storing administrative information;
 5. a second node including a second administrative node processor module for performing administrative functions; and
 7. an optical signaling channel for carrying administrative information from the second node to the first node for storage in the persistent storage module located in the first node, the optical signaling channel traveling on a path including one or more optical transmission media between the nodes.
10. 2. The network of claim 1 wherein each of the first and second nodes further comprises a signaling channel module, each signaling channel module controlling communication of administrative information at its node over the optical signaling channel;
 5. the signaling channel module of the first node being communicatively coupled to the first administrative node processor module in the first node and to the signaling channel module of the second node; and
 8. the signaling channel module of the second node being communicatively coupled to the second administrative node processor module of the second node and to the signaling channel module of the first node.

1 3. The network of claim 1 wherein the first node and the second node are neighbor
2 nodes.

1 4. The network of claim 1 wherein administrative information comprises
2 configuration information for a node element module.

1 5. The network of claim 4 wherein the node element module is embodied within a
2 circuit pack.

1 6. The network of claim 5 wherein the administrative information carried by the
2 optical signaling channel has a data transmission protocol of asynchronous transfer mode.

1 7. The network of claim 1 wherein the optical signaling channel is carried on a
2 single wavelength that travels on the path between the nodes.

1 8. The network of claim 7 wherein the wavelength is a wavelength outside of the
2 band of the payload data wavelengths that travel on the path.

1 9. The network of claim 7 wherein the wavelength is a wavelength inside of the band
2 of the payload data wavelengths that travel on the optical path.

1 10. The network of claim 1 wherein the optical signaling channel is embodied in one
2 or more divisions of a time-division multiplexed signal carried on one or more
3 wavelengths.

1 11. The network of claim 1 wherein the optical signaling channel is carried as a
2 sub-carrier frequency superimposed on one or more payload data wavelengths that travel
3 on the path between the nodes.

1 12. An optical communications network having a plurality of nodes comprising:
2 a first node including an administrative node processor module for performing

3 administrative functions, the administrative node processor module having a persistent
4 storage memory portion associated with a second node for storing administrative
5 information of the second node; and

6 an optical signaling channel for carrying from the second node to the first node
7 administrative information for storage in the persistent storage memory portion, the
8 optical signaling channel traveling on a path including one or more optical transmission
9 media between the nodes.

1 13. The network of claim 12 wherein each of the first node and the second node

2 further comprises a signaling channel module, each signaling channel module
3 controlling communication of administrative information at its node over the optical
4 signaling channel;

5 the signaling channel module of the first node being communicatively coupled to
6 the administrative node processor module in the first node and to the signaling channel
7 module of the second node; and

8 the signaling channel module of the second node being communicatively coupled
9 to the administrative node processor module of the second node and to the signaling
channel module of the first node.

10 14. The network of claim 12 wherein the optical signaling channel is carried on a
1 single wavelength that travels on the path between the nodes.

11 15. The network of claim 14 wherein the wavelength is a wavelength outside of the
12 band of the payload data wavelengths that travel on the path.

13 16. The network of claim 14 wherein the wavelength is a wavelength inside of the
14 band of the payload data wavelengths that travel on the path.

1 17. The network of claim 12 wherein the optical signaling channel is embodied in one
2 or more divisions of a time-division multiplexed signal carried on one or more
3 wavelengths.

1 18. The network of claim 12 wherein the optical signaling channel is carried as a sub-
2 carrier frequency superimposed on one or more payload data wavelengths that travel on
3 the path between the nodes.

1 19. An optical communications network having a plurality of nodes comprising:
2 a first node including an administrative node processor module for performing
3 administrative functions for the first node and a second node; and
4 an optical signaling channel communicatively coupling the nodes for the transfer
5 of administrative information, the optical signaling channel traveling on a path including
6 one or more optical transmission media between the nodes.

1 20. The network of claim 19 wherein each of the first node and the second node
2 further comprises a signaling channel module for controlling communication of
3 administrative information at its node over the optical signaling channel;

4 the signaling channel module of the first node being communicatively coupled to
5 the administrative node processor module and to the signaling channel module of the
6 second node; and

7 the signaling channel module of the second node transferring administrative
8 information received from the first node to a node element module.

1 21. The network of claim 20 wherein the administrative node processor module of the
2 first node comprises a persistent storage memory portion for storing administrative
3 information of the second node received via the optical signaling channel.

- 1 22. The network of claim 19 wherein the optical signaling channel is carried on a
2 single wavelength that travels on the optical path between the nodes.
- 1 23. The network of claim 22 wherein the wavelength is a wavelength outside of the
2 band of the payload data wavelengths traveling on the path.
- 1 24. The network of claim 22 wherein the wavelength is a wavelength inside of the
2 band of the payload data wavelengths traveling on the path.
- 1 25. The network of claim 19 wherein the optical signaling channel is embodied in one
2 or more divisions of a time-division multiplexed signal carried on one or more
3 wavelengths.
- 4 26. The network of claim 19 wherein the optical signaling channel is carried as a
5 sub-carrier frequency superimposed on one or more payload data wavelengths that travel
6 on the path between the nodes.
- 7 27. In an optical network having a plurality of nodes, a method comprising:
8 a first node receiving administrative information from a second node;
9 the first node storing the received administrative information from the second
10 node in a persistent storage memory portion located in the first node;
11 the first node performing administrative functions for the second node; and
12 the first node sending administrative information to the second node via an optical
13 signaling channel traveling on a path including one or more optical transmission media
14 between the nodes.
- 15 28. The method of claim 27 comprising:
16 a signaling channel module in the second node receiving administrative
17 information from the first node over the optical signaling channel,

4 the signaling channel module controlling communication of administrative
5 information over the optical signaling channel; and
6 the signaling channel module transferring the administrative information to a node
7 element module.

1 29. The method of claim 27 wherein the optical signaling channel is carried on a
2 single wavelength traveling on the path between the nodes.

1 30. The method of claim 29 wherein the wavelength is a wavelength outside of a band
2 of the payload data wavelengths traveling on the path.

1 31. The method of claim 29 wherein the wavelength is a wavelength inside of a band
2 of the payload data wavelengths traveling on the path.

1 32. The method of claim 27 wherein the optical signaling channel is embodied in one
2 or more divisions of a time-division multiplexed signal carried on one or more
3 wavelengths.

1 33. The method of claim 27 wherein the optical signaling channel is carried as a sub-
2 carrier frequency superimposed on one or more payload data wavelengths that travel on
3 the path between the nodes.

1 34. In an optical communications network having a plurality of nodes, a method
2 comprising:

3 a first node sending a query to one or more of the other nodes in the network via
4 an optical signaling channel traveling on one or more paths including one or more optical
5 transmission media between the first node and the other network nodes; and
6 the first node determining which of the other network nodes has a persistent
7 storage memory associated with the first node.

35. In an optical network having a plurality of nodes a method comprising:
 - sending administrative information from a first node to another network node for storage in the persistent storage memory in the other network node;
 - controlling the communication of the administrative information over an optical signaling channel traveling on a path including one or more optical transmission media between the first node and the other network node;
 - receiving the administrative information from the first node at the other network node; and
 - storing the administrative information from the first node in the persistent storage memory in the other network node.
 36. The method of claim 35 wherein the optical signaling channel is carried on a wavelength that travels on the path between the nodes.
 37. The method of claim 36 wherein the wavelength is a wavelength outside of a band of the payload data wavelengths that travel on the path.
 38. The method of claim 36 wherein the wavelength is a wavelength inside of a band of the payload data wavelengths that travel on the path.
 39. The method of claim 36 wherein the optical signaling channel is embodied in one or more divisions of a time-division multiplexed signal carried on the wavelength.
 40. The method of claim 35 wherein the optical signaling channel is carried as a sub-carrier frequency superimposed on one or more payload data wavelengths that travel on the path.
 41. An optical network having a plurality of nodes comprising:

2 means for receiving administrative information by a first node from a second
3 node;

4 means for storing the received administrative information from the second node in
5 a persistent storage memory located in the first node;

6 means for performing administrative functions for the second node by the first
7 node; and

8 means for sending administrative information from the first node to the second
9 node via internodal communication means.

1 42. An optical network having a plurality of nodes comprising:

2 means for sending a query from a first node to one or more of the other nodes in
3 the network via internodal communication means between the first node and the other
4 network nodes; and

5 means for determining by the first node which of the other network nodes has a
6 persistent storage memory associated with the first node.

7 43. An optical network having a plurality of nodes comprising:

2 means for sending administrative information from a first node to another network
3 node for storage in a persistent storage memory in the other network node;

4 means for controlling the communication of the administrative information via
5 internodal communication means between the first node and the other network node;

6 means for receiving the administrative information from the first node; and

7 means for storing the administrative information from the first node in the
8 persistent storage memory in the other network node.